State of Utah
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Water Pollution Control
288 North 1460 West, P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6146

M/053/005

September 7, 1988

Mr. Michael Stairwalt
Tenneco Minerals
P.O. Box 2650
St. George, Utah 84770

Re: Tenneco Minerals
Gold Strike Project
Review Comments

Dear Mr. Stairwalt:

We have reviewed your comment letters of 22 July and 4 August 1988 and have the following responses or additional concerns:

1a. The information provided has adequately addressed this issue and we will expect this design criteria to be included in the specifications which will be submitted for review.

1b. We understand that three (3) standpole piezometers will be installed per heap leach pad.

The monitoring of these piezometers must be daily for the first month of operation and weekly thereafter, for the remainder of the pads life for each pad.

1c. This comment has been acceptably addressed.

2. We conclude, based on the information presented that pads and ponds will not be constructed on any recent geological faults, landslides, or slump blocks which could compromise the integrity of their liner systems.

3. Based on the information presented and the opinion of your consulting engineer, we conclude that the foundation materials will be stable and provide adequate support so the liner systems of the pads and ponds will not be compromised.

4. The acid forming potential of the sulfide waste rock has been evaluated by the Division of Oil, Gas and Mining. The results indicate the acid forming potential is very high. Additional information concerning implementation and controls which will insure adequate mixing of the acid forming waste rock and the limestone must be submitted for review; including the movement and the disposition of soluble sulfate salts formed by the mixing of sulfide waste rock and limestone. Water level contours for the mine area indicate salts will move toward the Beaver Dam wash.

5. Provisions must be provided to verify the integrity of the entire liner system beneath the pads throughout the life of the project. This comment will be pursued further after completing our review of the groundwater monitoring program submitted by your consulting engineer and received 26 August 1988 and our meeting of 6 September 1988.

6. Based on the information presented, it is established that the climate at the project site is mild and no snow pack will accumulate. Thus, this comment has been adequately addressed.

8. This comment has been adequately addressed by your response.

9. Based on EPA research information available to us and our experience from permitting other projects, high density polyethylene (HDPE) will be an acceptable material for pad and pond liner systems. However, the design utilizing HDPE must be submitted for review and the minimum allowable thickness must be sixty (60) mils.

10. The response to our comment is noted and no further information on precipitation for this site will required. A presentation of the proposed operational procedures which will allow the process ponds to be sized to contain precipitation from only 5.7 acres of the 37 acres of heap leach pad must be presented.

11. We understand that all leakage and spillage from process solution piping will be contained in lined ditches and conveyed to the lined water pond for containment.

12. The information presented concerning the mild climate at the project site which will allow year round operation appears adequate. The acceptance of year-round operation is based on the owner's assurance of continuous operator presence on the site and that adequate equipment and resources will be available to insure that an unauthorized discharge of process fluids will not occur.

13. The information presented concerning the head which will develop on the pond secondary clay liner is noted.

14. The criteria listed in our 7 June letter for monitoring leak detection systems applies to any fluid found in the leak detection system. The criteria is clarified however to read gallons per acre-day (GPAD) instead of gallons per day (GPD) as stated in that letter. If it is verified that process fluids at any rate of flow are entering the leak detection system, the operation of those facilities must be discontinued until approvable action has been taken to stop the flow of process fluids through the liner system. Finally the leak detection criteria applies to both pads and ponds.

15. The magnitude of potential for pollution may not be as great for this pond, nevertheless it exists. The reasoning for requiring a leak detection system is to verify the integrity of a well designed and constructed liner throughout the life of the project. The Bureau of Water Pollution Control has not taken the position that certain waters due to their remote location or characteristics will be put at a higher risk of pollution by not requiring an effective liner system. Based on the foregoing a leak detection system will be required for the D.E. pond. However the Bureau of Water Pollution Control will consider a reinforced concrete structure designed, with adequately reinforced floor, walls and joints, water proofing provisions and an adequately stabilized base, that is certified by a registered Utah professional Engineer to be equivalent. The design of the structure must be submitted with the design plans and specifications for review.

16. Your request is noted. Approval of the sanitary waste disposal system must be issued by the Southwest District Health Department before initiation of operations will be allowed.

17. The details of the design for the silt fence and sediment impoundment structure which has been submitted to the Division of Oil, Gas and Mining must be submitted to the Bureau for review.

18. It is proposed that the following concept and basic neutralization criteria be established for this project.

    The neutralization criteria shall be as follows or as adopted by the Water Pollution Control Committee before or at the time of decommissioning.

    a. pH of 6.5 to 8.0

    b. Weak acid dissociable (WAD) cyanides less than or equal to 0.20 mg/l.

    c. Total cyanide less than or equal to 0.75 mg/l.

    d. Metals content shall meet drinking water standards.

    These parameters must be verified in three (3) tests reasonably spaced during a twenty-four (24) hour period.

    The requirement for neutralization verification by analysis of the heap leach spent ore will not be required on the condition that the spent ore piles will be left undisturbed for at least four (4) years once reclaimed.

19. This comment has been adequately addressed by our response in 1a.

20. This comment is now covered in our comment #5.

22. The leak detection criteria has been clarified in our comment #14 of this letter. We understand that all process ponds that develop a verified leak will be emptied within seven (7) days. We also understand that the pond will not be put back into service until acceptable repairs have been made to stop the flow of process fluids through the liner.

24. This comment has been addressed in our comment #18.

27. In reviewing the information submitted to the Division of Oil, Gas and Mining concerning the disposition of sulfide waste rock we noticed a paragraph discussing the bioleaching of sulfide ore. The project discussed to date is limited to cyanide or other leaching agents on the basic side of the pH scale. Be advised that the storing and leaching of sulfide ore with liquids on the acid side of the pH scale must be defined and will require a separate evaluation.

If there are any questions please call Mack Croft of Charlie Dietz, at 538-6146. Comments will be made at a later date on your recent submittal regarding monitoring wells.

Sincerely,

Don A. Ostler, P.E., Director
Bureau of Water Pollution Control

CDG/lme:dgm

cc: Ken A. Kluksdahl, Tenneco Minerals
Marty Litus, Tenneco Minerals
Brian Buck JBR Consultants
Lowell Braxton, Division of Oil, Gas and Mining
Wayne Thomas, Southwest District Health Dept.
Bill Dawson, Southwest District Health Dept.

1024-4